

STORAGE

FAQ

Q Can you explain the difference between RAID 0 and JBOD?

A As both RAID 0 and Just a Bunch of Disks (JBOD) arrays make multiple hard disks appear as a large, single volume they are often confused with each other, but they are actually subtly different.

In a RAID 0 array you need to have identical-sized hard disks. Data is split into equal chunks and striped across all the disks. As you're using multiple hard disks at once, performance is much quicker than with a single drive. However, if one drive fails, you'll lose all your data.

JBOD arrays can use hard disks of any size together. Data isn't striped across the disks; instead, it's written directly to a single hard disk until it's full, when the next disk is used. While this means that you don't get the performance benefits of RAID, if a single disk fails you will lose only the data that's on that disk.

Alan Lu

PC systems and storage expert

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AKASA Integral P2 LAN

★★★★★

£55 inc VAT



Akasa's Integral P2 LAN is a sleek-looking network-attached storage kit that can take a single PATA hard disk. Screwing the disk into the slide-out tray is straightforward enough, although it's easy to accidentally pinch the data and power cables between metal struts when reinserting the tray so extra care is required.

A driver must be installed on every PC on your network that needs access to the P2, but this should be cumbersome only on large networks. Although it isn't the fastest NAS we've seen, it managed to read and write files at a respectable speed. The P2 can also be used as a USB hard disk, where it managed throughputs of 24.89MB/s for large files and 16.5MB/s for small files, or as part of a RAID 0 or 1 array with other P2s.

The P2 is a speedy and attractive NAS, but Netgear's SC101 costs just £10 more and can house two PATA disks in a RAID array.

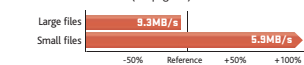
Alan Lu

SUMMARY

- ✓ Speedy performance
- ✓ Attractive appearance
- ✗ Fiddly installation

NETWORK-ATTACHED STORAGE Takes one PATA hard disk, 10/100Mbit/s network connection, USB Hi-Speed
PART CODE AK-ENP2NDAS-BL
SUPPLIER www.extremepcs.co.uk
DETAILS www.akasa.co.uk

PERFORMANCE (see page 56)



ATMT

HD160 Ultra-Portable Hard Disk 20GB

★★★★★

£89 inc VAT



ATMT's HD160 Ultra-Portable Hard Disk is around the size of a mobile phone and weighs just 81g so it will fit easily in a shirt pocket. A 14cm USB cable is tucked away in a crevice on the back of the disk, which allows for wasy attachment to even the most tightly spaced USB ports.

The HD160 uses a 1.8in hard disk like those found in iPods. Its speedy scores in our file-transfer benchmarks are faster than those of flash drives and other pocket hard disks of a similar size and capacity. A carry case, but no backup software, is included.

The HD160 isn't cheap, costing £4.78 per gigabyte. Unless you have to have a portable drive this small, Western Digital's Passport 120GB, reviewed in *What's New: Storage, Shopper* February 2007, has six times the capacity, uses a 2½in hard disk so will fit easily in a bag, and costs just £77 including VAT. With better performance, too, that is the drive we'd choose.

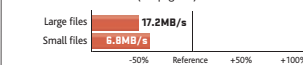
Alan Lu

SUMMARY

- ✓ Small and lightweight
- ✓ Speedy for a 1.8in disk
- ✗ High cost per gigabyte

EXTERNAL PORTABLE HARD DISK 20GB capacity, 18.6GB formatted capacity, USB Hi-Speed, bus powered
SUPPLIER www.amazon.co.uk
DETAILS www.atmt.co.uk

PERFORMANCE (see page 56)



SEAGATE 160GB Portable External Hard Drive

★★★★★

£133 inc VAT



Seagate's 160GB Portable External Hard Drive performed well in all our file-transfer tests and is one of the fastest USB portable hard disks we've seen. The BounceBack Express software backs up files according to your schedule, so there's no excuse for not protecting data.

Seagate provides two USB plugs, so it can get enough power without requiring an external supply. At 83p per gigabyte, Seagate's pocket-sized disk is fast and great value.



PORTABLE HARD DISK 160GB capacity, USB Hi-Speed, USB powered
PART CODE ST9160821U2-RK
SUPPLIER www.morecomputers.co.uk
DETAILS www.seagate.com
Consistently fast; low cost per gigabyte
Chunky case
FULL REVIEW Sep 2006

BUFFALO LinkStation Pro 250GB

★★★★★

£131 inc VAT

PRICE CUT!



Buffalo's LinkStation Pro 250GB network attached storage is impressive. When

copying large files, it's almost as quick as a USB hard disk. Backups from your PC are made to the LinkStation using the bundled MEMEO software. You can back up the LinkStation to a USB hard disk, but you do have to format it first. It's great value and easy to set up.



NETWORK ATTACHED STORAGE 250GB hard disk, 10/100/1,000Mbit/s network connection, two USB2 ports
PART CODE LS-250GL
SUPPLIER www.savastore.com
DETAILS www.buffalo-technology.com
Low cost per gigabyte
Must reformat USB backup disks
FULL REVIEW Nov 2006

SMARTDISK FireLite XPress 60GB

★★★★★

£65 inc VAT



SmartDisk's FireLite XPress portable USB hard disk has an LCD screen that displays how much free space is available, as well as the date when it was last connected to your computer. This information is refreshed automatically whenever you disconnect the XPress from your computer and works whether it is formatted as NTFS, FAT32 or HFS+.

The screen also displays up to 10 lines of descriptive text that you can change using the included Notepad-style application. We wish the display could automatically show the names of files stored on the disk, too.

The XPress is one of the quickest USB portable hard disks we've seen and it sped through all our tests. The case is chunky and the screen seems like a gimmick, but it's a useful extra if you're disorganised, especially as it isn't much more expensive than a regular 60GB hard disk.

Alan Lu

SUMMARY

- ✓ Fast at reading and writing files
- ✓ Useful display
- ✗ Chunky case

EXTERNAL PORTABLE HARD DISK 60GB capacity, 56GB formatted capacity, USB Hi-Speed, bus powered
PART CODE USBFLXP60
SUPPLIER www.cancomuk.com
DETAILS www.smartdisk.com

PERFORMANCE (see page 56)



IOMEGA Portable Hard Drive FireWire/USB2 120GB

★★★★★

£104 inc VAT



Iomega's 120GB hard disk is clad in a silver and white case that has USB2 and FireWire 400 ports. A two-plug USB splitter cable and a six-pin FireWire cable are included so you shouldn't need to use an external power adaptor. The bundled Retrospect Express utility can back up your files according to a schedule and can store previous versions of files.

Performance is good for a portable hard disk, and there was no real difference in speed between the FireWire and USB interfaces. However, Western Digital's Passport 120GB, reviewed in *What's New: Storage, Shopper* February 2007, has near-identical performance and costs just £78. It doesn't ship with backup software, just file-synchronisation software, but this serves a similar purpose. We'd opt for the Passport over Iomega's Portable Hard Drive unless you need FireWire.

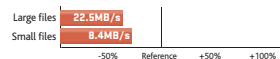
Alan Lu

SUMMARY

- ✓ FireWire and USB ports
- ✓ Includes backup software
- ✗ Pricier than the competition

EXTERNAL PORTABLE HARD DISK 120GB capacity, 111GB formatted capacity, USB Hi-Speed, FireWire 400, bus powered
PART CODE 33633
SUPPLIER www.morecomputers.co.uk
DETAILS www.iomega-europe.com

PERFORMANCE (see page 56)



CHOOSING AN... Internal Hard Disk

Follow the steps to find your ideal specs

CAPACITY: 250GB

SPINDLE SPEED: 7,200rpm

INTERFACE: PATA or SATA

Recommended minimum in grey

1 An internal hard disk with the specifications above should cost around £50. It's fast enough for general use and provides enough storage space for an average user. Make sure you get the interface type that matches your PC.

Parallel ATA (PATA) connectors use wide, ribbon cables and are generally found in older computers. The newer Serial ATA (SATA) interface uses a thinner cable and is slightly quicker.

2 PATA hard disks require a standard four-pin Molex power cable. Some SATA disks can also use a Molex power connector, but others require the newer SATA power connector. If your power supply doesn't have any SATA power leads, then you can buy a converter for around £4 including VAT from www.maplin.co.uk.

3 Buy the capacity hard disk that you'll need, but aim to leave a little breathing room, as you'll always need more storage. Hard disks with a capacity of 250GB tend to have the lowest cost per gigabyte, but not by much. Buy the largest hard disk that you can justify.

4 If you want more disk space or you want to protect your data, think about buying hard disks to create a RAID array. These use multiple hard disks to create a single, large, logical disk with better performance or protection for your data. RAID arrays need to be built with hard disks of the same size. Technically these can be from different manufacturers, but try and get identical drives if you can.

5 A hard disk's spindle speed is very important as it governs how quickly the disk can transfer data. A spindle speed of 7,200rpm is common on desktop drives and fast enough for most purposes. If you do a lot of video editing or you run demanding applications, a 10,000rpm hard disk is a better choice, but they are a lot more expensive. Hard disks with 5,400rpm spindle speeds aren't common and are quite slow, but they generate less heat and noise, so could be a good choice if you're building a small, quiet PC.

WESTERN DIGITAL 500GB My Book Pro Edition

★★★★★

£174 inc VAT

PRICE CUT!



The 500GB My Book Pro has FireWire 400 and 800 ports in addition to USB2. When connected using USB, it managed a throughput of 24.1MB/s. Using FireWire 800, it was twice as fast and one of the quickest external disks we've seen.

It is great value at 37p per gigabyte, which is only a few pence more per gigabyte than most 160GB and 250GB external disks.

EXTERNAL HARD DISK 500GB capacity, 465GB formatted capacity (NTFS), USB Hi-Speed, FireWire 400 and 800 interfaces
PART CODE WDG1T5000 SUPPLIER www.savastore.com
DETAILS www.westerndigital.com ✓ Excellent value; FireWire and USB; fast performance FULL REVIEW Jan 2007

HITACHI Deskstar T7K250 HDT722525DLAT80

★★★★★

£52 inc VAT



With a low cost of just 22p per gigabyte, Hitachi's Deskstar T7K250 HDT722525DLAT80 is remarkable value.

It did well in our file-transfer tests, performing particularly quickly in our large files test. Its large capacity should provide enough space for most of your files, but you can always buy two and use RAID for more capacity. This PATA hard disk is excellent value and its performance is reliably quick.



EXTERNAL HARD DISK 250GB hard disk, 232GB formatted capacity (NTFS), PATA interface, 7,200rpm spindle speed, 8MB cache
PART CODE HDT722525DLAT80 SUPPLIER www.savastore.com
DETAILS www.hitachigst.com ✓ Consistently fast performance; low cost per gigabyte FULL REVIEW Jul 2006